REMARKS

Claims 40-65 are pending in this application. Claims 1-39 have been previously cancelled without prejudice or disclaimer. Claims 45, 46 and 51-65 have been withdrawn as being directed to non-elected subject matter. Claims 40-44 and 47-50 have been amended.

Applicant, by amending any claims herein, makes no admission as to the validity of any rejection made by the Examiner against any of these claims. Applicant reserves the right to reassert the original claim scope of any claim amended herein, in a continuing application.

Independent claim 40 has been amended to recite a "method for diagnosing breast cancer in a subject, comprising: determining a level of expression of a p14 peptide in one or more fluid samples from the subject, wherein when the level of expression is above a determined standard, there is a probability for breast cancer in the subject."

Independent claim 47 has been amended to recite a "method for screening fluid samples from subjects comprising: contacting each of the fluid samples from the subjects with anti-p14 antibodies and determining binding of anti-p14 antibodies and p14 peptide, if present in the sample, wherein when a degree of binding is higher than a determined standard there is a probability that the subject from which the sample was obtained has developed, or is susceptible to developing, breast cancer."

Dependent claims 41-44 and 48-50 have each been amended to more clearly set forth the subject matter recited therein, e.g., by correcting dependency, antecedent

basis and/or correcting Markush language. Claims 43 and 49 have further been amended to recite that the fluid sample is selected from the group consisting of whole blood, blood serum, milk and saliva.

Support for the amendments to the claims can be found throughout the specification and claims as originally filed. For example, please *see* the published application at paragraph at 20, 28 and 69.

No new matter has been added.

In view of the remarks set forth below, further and favorable consideration is respectfully requested.

I. At page 2 of the Official Action, claims 40-44 and 47-50 have been rejected under 35 USC § 112, second paragraph.

The Examiner asserts that claims 40 and 47 are indefinite for reciting either "high level of expression" or "high degree of binding." Further the Examiner asserts that claims 42 and 48 are indefinite because the phrase suspicious area of the breast" is allegedly subjective.

Applicants respectfully submit that this rejection has been obviated by the amendments to the claims submitted herewith. In this regard, the terms "high" and "suspicions" have been deleted from the claims.

In view of the foregoing, it is submitted that claims 40-44 and 47-50 are clear and definite within the meaning of 35 USC § 112, second paragraph. Therefore, reconsideration and withdrawal of this rejection is respectfully requested.

II. At pages 3-5 of the Official Action, claims 40-43 and 47-49 have been rejected under 35 USC § 103(a) as unpatentable over Pogo (US Patent No. 6,040,146) in view of Hoch-Marchaim 2003 (of record), in further view of Melana I (of record).

The Examiner asserts that it would have been obvious to combine the teachings of Pogo with Hoch-Marchaim, Melana I to obtain the claimed method for diagnosing breast cancer.

In view of the foregoing, Applicant respectfully traverses the rejection of claims 40-43 and 47-49.

To establish a *prima facie* case of obviousness, the PTO must satisfy three requirements. First, as the U.S. Supreme Court held in *KSR International Co. v. Teleflex Inc. et al.*, 550 U.S. 398 (2007), "a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions. ...it [may] be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. ...it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does... because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known." (*KSR*, 550 U.S. at 417) Second, the proposed modification of the prior art must have had a reasonable expectation of success,

determined from the vantage point of the skilled artisan at the time the invention was made. *Amgen Inc. v. Chugai Pharm. Co.*, 18 USPQ2d 1016, 1023 (Fed. Cir. 1991). Lastly, the prior art references must teach or suggest all the limitations of the claims. *In re Wilson*, 165 USPQ 494, 496 (C.C.P.A. 1970).

It is submitted that a proper case of *prima facie* obviousness has not been established because whether taken alone or together, none of the cited references teach or suggest diagnosing or screening for breast cancer by analysis of fluid samples, e.g., blood.

Independent claim 40 is directed to a method for diagnosing breast cancer in a subject, comprising: determining a level of expression of a p14 peptide in one or more fluid samples from the subject, wherein when the level of expression is above a determined standard, there is a probability for breast cancer in the subject. Claims 41-43 depend, either directly or indirectly, from claim 40.

Independent claim 47 is directed to a method for screening fluid samples from subjects comprising: contacting each of the fluid samples from the subjects with anti-p14 antibodies and determining binding of anti-p14 antibodies and p14 peptide, if present in the sample, wherein when a degree of binding is higher than a determined standard there is a probability that the subject from which the sample was obtained has developed, or is susceptible to developing, breast cancer. Claims 48-49 depend, either directly or indirectly, from claim 47

Pogo describes materials and methods for diagnosing breast cancer in humans, based, at least in part, on the idea that a substantial percentage of human breast cancer ***tissue samples*** contain nucleic acid sequences corresponding to a portion of the

mouse mammary tumor virus env gene. *See* Pogo at the abstract. Hoch-Marchaim 2003 describes the p14 peptide as being the leader peptide of MMTV Env precursor protein. *See* Hoch-Harchaim at the abstract. Melana I describe that paraffin embedded section of ***breast tissue*** from breast cancer or normal breasts may be used in the detection ofMMTV-like env sequences.

However, Applicant submits that, whether taken alone or in combination, none of the cited references teach or suggest diagnosing or screening for breast cancer by analyzing of ***fluid samples***, e.g., blood, as recited in claims 40-43 and 47-49. In this regard, Applicant notes that the cited references each describe the samples as being tissue samples. Since not all of the elements of the presently claimed subject matter is taught or suggested by the cited references, reconsideration and withdrawal of this rejection is respectfully requested.

In addition to not being taught or suggested by the cited references, Applicant submits that the presently claimed subject matter is non-obvious because a skilled artisan would not have had a reasonable expectation of detecting the p14 peptide in fluid samples, e.g., blood serum, in view of both Hoch-Marchaim 1998 (submitted with the previous Response to Official Action filed in this application), and Hoch-Marchaim 2003. In particular, as described by the Hoch-Marchaim publications, the leader peptide of the Env-precursor of MMTV, ***while present in the cytoplasm, is translocated to and concentrated within the nucleoli of murine T-cell lymphomas that harbor this virus***. Thus, reading Hoch-Marchaim 1998 and 2003, ***a skilled artisan would not expect free p14 peptide to be available in fluid samples such as blood serum***.

However, contrary to the understanding of the p14 peptide in Hoch-Marchaim 1998 and 2003, the claimed subject matter exploits the unexpected finding that the p14 peptide may be present free within fluid samples. As evidence of this Applicant submits herewith a declaration executed by the inventor of the presently claimed subject matter who, notably, is also a co-author or Hoch-Marchaim 1998 and 2003. As set forth at paragraph 6, the declaration provides evidence that p14 is present in sera from mice previously injected with 4T1 (murine mammary carcinoma that harbors MMTV) or T-67 (murine lymphoma that harbors MMTV, descendants of T-25) cells. In contradistinction to the teachings of Hoch-Marchaim 1998 and 2003, as shown by the experiments described in paragraphs 7-10 of the declaration, Applicant submits that it is unexpected that p14 could be detected in bodily fluid samples, and that this detection could be used to diagnose or screen for breast cancer. Thus, Applicant submits that the presently claimed subject matter is non-obvious.

In view of the remarks set forth herein, it is submitted that, whether taken alone or in combination, the cited references do not render the presently pending claims obvious within the meaning of 35 USC § 103 (a). Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

III. At pages 6 of the Official Action, claims 40-42, 44, 47, 48 and 50 have been rejected under 35 USC § 103(a) as unpatentable over Pogo (US Patent No. 6,040,146) in view of Hoch-Marchaim 2003 (of record), in further view of Melana II (of record).

The Examiner asserts that it would have been obvious to combine the teachings of Pogo with Hoch-Marchaim and Melana II to make the claimed method for diagnosing breast cancer.

In view of the foregoing, Applicant respectfully traverses the rejection of claims 40-43 and 47-49.

A brief outline of the relevant authority on obviousness is set forth in § II above. In addition, the presently claimed subject matter Pogo and Hoch-Marchaim (2003) are also discussed. As indicated, whether taken alone or together, Applicants submits that Pogo and Hoch Marchaim (2003) do not teach or suggest diagnosing or screening for breast cancer by analyzing of ***fluid samples***, e.g., blood, as recited in p[ending claims. Furthermore, based on the state of the art at the time of filing of the present application, a skilled artisan would not have a reasonable expectation of being able diagnose or screen for breast cancer by analyzing fluid samples, since, as evidenced by Hoch-Marchaim 1998 and 2003, it was believed that, while present in the cytoplasm, the leader peptide of the Env-precursor of MMTV is translocated to and concentrated within the nucleoli of murine T-cell lymphomas that harbor this virus. Thus, reading Hoch-Marchaim 1998 and 2003, ***a skilled artisan would not expect free p14 peptide to be available in fluid samples such as blood serum***.

It is submitted that Melana II do not remedy the deficiencies of Pogo and Hoch-Marchaim (2003) because although Melena II describe the presence of the MMTV in peripheral mononuclear cells, according to Melena II, the virus harbors the cells; therefore, it cannot be detected by the claimed methods. In addition, Applicants submit that the presently claims are non-obvious since the presently claimed methods are based on the unexpected finding that free p14 peptide may be found in fluid samples, utilized to diagnose and screen for breast cancer.

In view of the remarks set forth herein, it is submitted that, whether taken alone or in combination, the cited references do not render the presently pending claims obvious within the meaning of 35 USC § 103 (a). Accordingly, reconsideration and withdrawal of this rejection is respectfully requested.

CONCLUSION

In view of the foregoing, Applicant submits that the application is in condition for immediate allowance. Early notice to that effect is earnestly solicited. The Examiner is invited to contact the undersigned attorney if it is believed that such contact will expedite the prosecution of the application.

In the event this paper is not timely filed, Applicant petitions for an appropriate extension of time. Please charge any fee deficiency or credit any overpayment to Deposit Account No. 14-0112.

Respectfully submitted,

THE NATH LAW GROUP

Date: May 12, 2011

/Ari G. Zytcer/
Susanne M. Hopkins
Registration No. 33,247
Ari G. Zytcer
Registration No. 57,474
Customer No. 20529

THE NATH LAW GROUP
112 South West Street
Alexandria, VA 22314
Phone: (703)548-6284
Fax: (703) 683-8396